

Title (en)

Method of preparing mesoporous molecular sieves for absorbing nitrogen oxides in oxygen-rich engine exhaust gas

Title (de)

Verfahren zum Herstellen von mesoporösen Molekularsieben zum Adsorbieren von Stickstoffoxiden aus sauerstoffreichem Motorabgas

Title (fr)

Méthode pour préparer des tamis moléculaires mésoporeux pour adsorber des oxydes d'azote de gaz d'échappement d'un moteur

Publication

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Application

EP 00300554 A 20000126

Priority

US 24687699 A 19990208

Abstract (en)

[origin: EP1029582A1] This invention is a catalyst comprising a mesoporous aluminium oxide material including precious metal. The material is made by sol-gel techniques using a neutral surfactant with alkoxides, water and alcohol to form the aluminium oxide material having an interconnected pore structure of mesoporous size. The catalyst is useful to absorb nitrogen oxides from lean-burn engines when the exhaust gas is rich in oxygen, which may be gasoline or diesel engines. The nitrogen oxides are desorbed when the exhaust is made richer and is reduced over the precious metal with reductants in the gas like hydrocarbons. The alkoxides include aluminium alkoxides and at least one of alkali metal and alkaline earth metal. Preferably, the alkoxides include certain heterometallic alkoxides of aluminium and alkali metals or alkaline earth metals. Optionally, the alkoxides may also include lanthanides. Preferably, the alcohol used to make the oxide has four carbon atoms, most preferably being sec-butanol.

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IPC 8 full level

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CPC (source: EP US)

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Cited by

EP2343120A3; EP2361669A1; US9463439B2; US8871669B2; US9545618B2; WO2009134558A1; US9375710B2; US9463438B2; US7341973B2; US8530369B2; US8889587B2; US9272271B2; WO187482A1; WO2009038855A3

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